

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference UA445PCT	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US03/15749	International filing date ( <i>day/month/year</i> ) 20 May 2003 (20.05.2003)	(Earliest) Priority Date ( <i>day/month/year</i> )
Applicant THE UNIVERSITY OF AKRON		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the Report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (See Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 2b



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

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International application No.

PCT/US03/15749

## Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

### NEW ABSTRACT

A gas detector utilizing tunnel junction geometry is disclosed. The gas detector comprises a first electrically conductive material layer, an electrically nonconductive material layer disposed on the first electrically conductive material layer, a second electrically conductive material layer disposed on the electrically nonconductive material layer, a gas source (34) in fluid communication with the second electrically conductive material layer; and a power source in electrical communication with the first and second electrically conductive material layers. A method of detecting a gas utilizing the detector of the present invention is also disclosed. A method of making a gas detector is likewise disclosed.

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International application No.

PCT/US03/15749

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : G01N 27/00,27/44; C23F 1/02

US CL : 257/253; 73/31.05; 205/786.5

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 257/253; 73/31.05; 205/786.5

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 4,514,263 A (JANATA et al) 30 April 1985 (30.04.1985), Figure 1, column 5, column 7 lines 64+.	1-5,7,9,11-13,15,18,19 ----- 6,10,14
X	US 6,298,710 B1 (SAMMAN et al) 09 October 2001 (09.10.2001), abstract, Figure 1, column 3.	1,3,7-9,12,16-19
X	US 4,671,852 A (PYKE) 09 June 1987 (09.06.1987), Figure 1E, column 5 line 38 through column 6 line 7.	1-3,7,9,11,12,15,18,19
Y	US 6,290,838 B1 (MIFSUD et al) 18 September 2001 (18.09.2001), column 1 lines 13-24.	14
Y	US 6,503,831 B2 (SPEAKMAN) 07 January 2003 (07.01.2003), column 7, lines 22-40.	6,10
A	US 2002/0017126 A1 (DIMEO, JR. et al) 14 February 2002 (14.02.2002), page 12, paragraph 171	6,10
A	US 5,372,785 A (JOHNSON et al) 13 December 1994 (13.12.1994), see abstract and Figures 2-3.	1,9
Y	US 5,716,506 A (MACLAY et al) 10 February 1998 (10.02.1998), column 5 lines 1-11, column 5 lines 32-43, column 14 lines 5-23.	6,10



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

20 August 2003 (20.08.2003)

Date of mailing of the international search report

**05 NOV 2003**

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## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,996,073 A (COPELAND et al) 26 February 1991 (26.02.1991), column 4, lines 7-48.	6,10,14